

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listing of claims in the application:

Listing of Claims:

Claims 1-6 (canceled)

7. (currently amended) A method of obtaining electrolytic manganese from treated sludge of exhaust gases from silico- and ferroalloy production furnaces, comprising

an initial sulfation phase;

a hydrometallurgical phase comprising the steps of lixiviation, primary purification, secondary purification and conditioning; and

an electrolysis phase, wherein

said sludge is processed to produce a secondary waste having half the inert weight and having the property of being self-compactable;

an initial sulfation process with near-stoichiometric acid consumptions is used;

the removal of impurities, primarily of iron and aluminum, is caused primarily by pH control, to produce a pulp;

the removal of base metal impurities, mainly zinc, is caused by means of a precipitation thereof in the form of sulfurs suitable for other uses; and wherein

electrolyzed solutions are obtained having ~~which produce~~ a manganese with a purity of 99.9%.

8. (previously presented) The method of clam 7, wherein the sulfation phase is is carried out in a furnace in which

exothermic reactions occur inside the furnace and on PTFE trays, generating SO₂ gases.

9. (previously presented) The method of claim 7, wherein the lixiviation and primary purification steps are carried out with a consumed anolyte of an electrolysis cell or alternatively with a synthetic anolyte.

10. (previously presented) The method of claim 7, wherein in said lixiviation step, an anolyte is used as a lixiviation agent, and wherein said lixiviation step is carried out with strong stirring in a reactor coated with an acid-resistant material.

11. (previously presented) The method of claim 7, wherein the primary purification step is carried out in the same reactor as the lixiviation, and the pH of the pulp is raised to values near neutral pH, followed by filtering the pulp in a filter press and washing with water, preferably in the filter press itself, to obtain an inert waste.

12. (previously presented) The method of claim 11, wherein the washing water of the pulp is used as added water to a mixer in the initial phase of the process, or it can be re-used successive times to concentrate the manganese therein.

13. (currently amended) A method of obtaining electrolytic manganese from ferroalloy manufacturing waste or any other industrial waste having manganese and an inert weight, consisting essentially of:
an initial sulfation phase;

a hydrometallurgical phase comprising the steps of
lixiviation, primary purification, secondary purification and
conditioning; and

an electrolysis phase, wherein

said waste is processed to produce a secondary waste
having half the inert weight and having the property of being
self-compactable;

an initial sulfation process with near-stoichiometric
acid consumptions is used;

the removal of impurities, primarily of iron and
aluminum, is caused primarily by pH control, to produce a
pulp;

the removal of base metal impurities, mainly zinc, is
caused by means of a precipitation thereof in the form of
sulfurs suitable for other uses; ~~and wherein~~

~~electrolyzed solutions are obtained having which produce
a manganese with a 99.9%.~~

14. (new) A method of obtaining electrolytic manganese
from treated sludge of exhaust gases from silico- and
ferroalloy production furnaces, comprising

a sulfation step;

a lixiviation step following the sulfation step;

a primary purification step following the lixiviation
step;

a secondary purification following the primary
purification step; and then

a conditioning step comprising a crystallization step;
and then

an electrolysis step, wherein

said sludge is processed to produce a secondary waste

having half the inert weight and having the property of being self-compactable;

an initial sulfation process with near-stoichiometric acid consumptions is used;

the removal of impurities, primarily of iron and aluminum, is caused primarily by pH control, to produce a pulp;

the removal of base metal impurities, mainly zinc, is caused by means of a precipitation thereof in the form of sulfurs suitable for other uses; and wherein

electrolyzed solutions are obtained having a manganese purity of 99.9%.

15. (new) The method of claim 14, wherein the crystallization step comprises precipitating calcium and magnesium ammonium salts.